

1. An airbag module for protecting a vehicle occupant comprising:  
an airbag inflator;  
an airbag cushion, the airbag cushion having a cushion throat, a  
windshield face, an occupant face, an inboard face, and an outboard face; and  
5 a one-piece clamshell inflator housing, the inflator housing comprising an  
inflator sleeve and a diffuser sleeve, the inflator sleeve being configured to  
receive and close about the airbag inflator.
2. The airbag module of claim 1, wherein the cushion throat of the airbag  
cushion comprises a loop diffuser.
- 10 3. The airbag module of claim 2, wherein the loop diffuser comprises a  
secondary internal sleeve of the cushion throat having at least one diffuser orifice.
4. The airbag module of claim 1, wherein the cushion throat of the airbag  
cushion is configured to be coupled to the inflator housing.
5. The airbag module of claim 1, wherein the inflator housing further  
15 comprises cushion attachments.
6. The airbag module of claim 5, wherein the cushion attachments are  
attachment pegs.

7. The airbag module of claim 6, wherein the cushion throat comprises attachment rings for engaging the attachment pegs of the inflator housing.

8. The airbag module of claim 1, wherein the diffuser sleeve is formed by closing the clamshell inflator housing.

5 9. The overhead airbag module of claim 1, further comprising fasteners for maintaining the clamshell inflator housing in a closed position.

10. The overhead airbag module of claim 1, wherein the airbag cushion is folded using a method comprising the steps of:

flattening the windshield face and the occupant face of the airbag cushion;

10 tucking the inboard and outboard faces of the airbag cushion inwardly to produce at least one longitudinal pleat and a first folded end and a second folded end;

drawing the first and second folded ends of the airbag cushion toward each other to position them directly opposite the inflation orifice;

15 rolling the first folded end of the airbag cushion toward the inflation orifice to produce a first roll fold; and

rolling the second folded end of the airbag cushion toward the inflation orifice to produce a second roll fold, wherein the second roll fold encompasses the first roll fold.

11. An overhead airbag module for protecting a vehicle occupant comprising:  
an airbag inflator;

an overhead airbag cushion, the airbag cushion having a cushion throat, a  
windshield face, an occupant face, an inboard face, and an outboard face; and

5 a one-piece clamshell inflator housing, the inflator housing comprising an  
inflator sleeve and a diffuser sleeve, the inflator sleeve being configured to  
receive and close about the airbag inflator.

12. The overhead airbag module of claim 11, wherein the cushion throat of the  
overhead airbag cushion comprises a loop diffuser.

10 13. The overhead airbag module of claim 12, wherein the loop diffuser  
comprises a secondary internal sleeve of the cushion throat having at least one diffuser  
orifice.

14. The overhead airbag module of claim 11, wherein the cushion throat of the  
overhead airbag cushion is configured to be coupled to the inflator housing.

15 15. The overhead airbag module of claim 11, wherein the inflator housing  
further comprises cushion attachments.

16. The overhead airbag module of claim 15, wherein the cushion attachments  
are attachment pegs.

17. The overhead airbag module of claim 16, wherein the cushion throat comprises attachment rings for engaging the attachment pegs of the inflator housing.

18. The overhead airbag module of claim 11, wherein the diffuser sleeve is formed by closing the clamshell inflator housing.

5 19. The overhead airbag module of claim 11, further comprising fasteners for maintaining the clamshell inflator housing in a closed position.

20. The overhead airbag module of claim 11, wherein the airbag cushion is folded using a method comprising the steps of:

flattening the windshield face and the occupant face of the airbag cushion;

10 tucking the inboard and outboard faces of the airbag cushion inwardly to produce at least one longitudinal pleat and a first folded end and a second folded end;

drawing the first and second folded ends of the airbag cushion toward each other to position them directly opposite the inflation orifice;

15 rolling the first folded end of the airbag cushion toward the inflation orifice to produce a first roll fold; and

rolling the second folded end of the airbag cushion toward the inflation orifice to produce a second roll fold, wherein the second roll fold encompasses the first roll fold.

21. An airbag cushion having a throat portion and a cushion portion, the throat portion further comprising a loop diffuser.

22. The airbag cushion of claim 21, wherein the loop diffuser comprises an internal sleeve having at least one diffuser orifice to allow passage of an inflation gas between the throat portion and the cushion portion of the airbag cushion.

23. The airbag cushion of claim 22, wherein the internal sleeve of the loop diffuser has a windshield-facing panel and an occupant-facing panel, the panels being attached to form a closed sleeve.

24. The airbag cushion of claim 23, wherein the internal sleeve of the loop diffuser comprises at least one diffuser orifice on the occupant-facing panel.

25. The airbag cushion of claim 23, wherein the internal sleeve of the loop diffuser comprises at least one diffuser orifice on the windshield-facing panel.

26. The airbag cushion of claim 23, wherein the internal sleeve of the loop diffuser comprises at least one diffuser orifice on the occupant-facing panel and on the windshield-facing panel.

27. The airbag cushion of claim 21, wherein the airbag cushion is an overhead airbag cushion.

28. A folding method for an overhead airbag cushion comprising the steps of:  
providing an airbag cushion having a windshield face, an occupant face,  
an inboard face, an outboard face, and an inflation orifice;  
flattening the windshield face and the occupant face of the airbag cushion;  
5 tucking the inboard and outboard faces of the airbag cushion inwardly to  
produce at least one longitudinal pleat and a first folded end and a second folded  
end;  
drawing the first and second folded ends of the airbag cushion toward each  
other to position them directly opposite the inflation orifice;  
10 rolling the first folded end of the airbag cushion toward the inflation  
orifice to produce a first roll fold; and  
rolling the second folded end of the airbag cushion toward the inflation  
orifice to produce a second roll fold, wherein the second roll fold encompasses the  
first roll fold.

15 29. The folding method of claim 28, wherein the step of tucking the inboard  
and outboard faces of the airbag cushion inwardly to produce at least one longitudinal  
pleat is repeated to produce a plurality of longitudinal pleats.

30. The folding method of claim 29, wherein 2 longitudinal pleats are  
produced.

31. The folding method of claim 28, wherein the step of rolling the first folded end of the airbag cushion toward the inflation orifice comprises rolling the first folded end against the windshield face of the airbag cushion.

5 32. The folding method of claim 28, wherein the step of rolling the second folded end of the airbag cushion toward the inflation orifice comprises rolling the first folded end against the occupant face of the airbag cushion.

33. An airbag module comprising an airbag cushion folded according to the method of claim 28.

34. An overhead airbag module assembled according to a method comprising the steps of:

providing an airbag cushion having a windshield face, an occupant face, an inboard face, an outboard face, and a cushion throat with an inflation orifice;

providing an inflator housing for receiving and retaining an airbag inflator, the inflator housing including at least one cushion attachment;

attaching the cushion throat of the airbag cushion to the inflator housing;

flattening the windshield face and the occupant face of the airbag cushion;

tucking the inboard and outboard faces of the airbag cushion inwardly to produce at least one longitudinal pleat and a first folded end and a second folded end;

drawing the first and second folded ends of the airbag cushion toward each other to position them directly opposite the airbag inflator;

rolling the first folded end of the airbag cushion toward the airbag inflator to produce a first roll fold; and

rolling the second folded end of the airbag cushion toward the airbag inflator to produce a second roll fold, wherein the second roll fold encompasses the first roll fold.

35. The overhead airbag module of claim 34, wherein the step of attaching the cushion throat of the airbag cushion to the inflator housing comprises at least partially encompassing the inflator housing with the cushion throat and attaching the cushion throat to the cushion attachment of the inflator housing.



36. The overhead airbag module of claim 34, wherein the step of tucking the inboard and outboard faces of the airbag cushion inwardly to produce at least one longitudinal pleat is repeated to produce a plurality of longitudinal pleats.

5 37. The overhead airbag module of claim 36, wherein 2 longitudinal pleats are produced.

38. The overhead airbag module of claim 34, wherein the step of rolling the first folded end of the airbag cushion toward the inflation orifice comprises rolling the first folded end against the windshield face of the airbag cushion.

10 39. The overhead airbag module of claim 34, wherein the step of rolling the second folded end of the airbag cushion toward the inflation orifice comprises rolling the first folded end against the occupant face of the airbag cushion.